

PM10 Maintenance Plan Pagosa Springs

Technical Support Document

Emission Inventory



FINAL
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1. Emission Inventory Methodology

The Air Pollution Control Division (APCD) developed the 2007, 2015 and 2021 emission inventories in the "PM10 Maintenance Plan for Pagosa Springs" using U.S. Environmental Protection Agency (EPA) approved emissions modeling methods, including EPA's MOBILE6 model and local VMT data for on-road mobile source emissions, EPA's non-road model, local demographic information for area and off-road sources, and reported actual emissions for point sources. Estimates for future emissions are based on the above-mentioned tools and the EPA's Economic Growth and Analysis System (EGAS) model for estimating future point sources activity, and VMT growth for on-road mobile sources.

Highway mobile source emissions are from the EPA model MOBILE6, an emission factor model for predicting gram per mile emissions of Hydrocarbons (HC), Carbon Monoxide (CO), Nitrogen Oxides (NO_x), Carbon Dioxide (CO₂), Particulate Matter (PM), and toxics from cars, trucks, and motorcycles under various conditions.

Non-road source emissions are from the EPA Non-Road Model. This model includes the impact of future controls on non-road engines, which is used in equipment such as lawn and garden equipment and construction equipment.

Area source emissions (including heating, construction, railroads, etc.) are from the 2002 EPA National Emissions Inventory (NEI), grown to 2007, 2015 and 2021 by Archuleta County population growth from data from the State Demography Office that is provided in Table 1. For more documentation for these categories, refer to the NEI documentation (EPA, 2008).

Under Air Quality Control Commission Regulation No. 3, the APCD requires any source that emits two tons per year or greater to submit an Air Pollutant Emission Notice (APEN) (APCD, 2008). This means that sources that emit less than two tons per year are not necessarily accounted for in an emissions inventory. The point source emissions for Pagosa Springs were obtained from this tracking system. The emission estimates are made using a variety of methodologies. Data from source-specific emission tests, or continuous emission monitors are preferable, but not always available. The EPA has developed a variety of emission factors to estimate emissions as well. Emission factors are frequently the best or only method available for estimating emissions.

There are no point sources in the Pagosa Springs Attainment Area.

2. Archuleta County Population Projections from State Demography Office

Table 1: Archuleta County Population Projections (July 2009)

Year	Population
2007	12,625
2008	12,704
2009	12,933
2010	13,283
2011	13,659
2012	14,085
2013	14,539
2014	15,044
2015	15,551
2016	16,061
2017	16,598
2018	17,162
2019	17,750
2020	18,361
2021	18,973

3. 2007 Baseline Emission Inventory Summary

This section presents the 2007 emission inventories for the maintenance plan.

Table 2: 2007 Baseline PM10 Emission Inventory

Area and Mobile Sources	PM10 Emissions [tons/year]	PM10 Emissions [lbs/day]
Commercial Cooking	1.18	6.44
Construction	52.11	285.52
Fuel Combustion	0.01	0.07
Non-Road	1.73	9.49
Structure Fires	0.02	0.09
Woodburning	17.77	97.38
Unpaved Road-Dust	16.27	89.16
Paved Road-Dust	93.10	510.13
Highway Vehicles	2.06	11.31
Agriculture	0.03	0.15
TOTAL:	184.28	1,009.7

4. 2015 Interim Emission Inventory Summary

This section presents the 2015 emission inventories for the maintenance plan.

Table 3: 2015 Interim PM10 Emission Inventory

Area and Mobile Sources	PM10 Emissions [tons/year]	PM10 Emissions [lbs/day]
Commercial Cooking	1.45	7.93
Construction	64.18	351.69
Fuel Combustion	0.02	0.09
Non-Road	2.13	11.69
Structure Fires	0.02	0.12
Woodburning	21.89	119.95
Unpaved Road-Dust	21.49	117.78
Paved Road-Dust	122.98	673.89
Highway Vehicles	1.93	10.58
Agriculture	0.03	0.15
TOTAL:	236.13	1,293.85

5. 2021 Maintenance Emission Inventory Summary

This section presents the 2021 emission inventories for the maintenance plan.

Table 4: 2021 Maintenance PM10 Emission Inventory

Area and Mobile Sources	PM10 Emissions [tons/year]	PM10 Emissions [lbs/day]
Commercial Cooking	1.77	9.70
Construction	78.31	429.10
Fuel Combustion	0.02	0.11
Non-Road	2.60	14.25
Structure Fires	0.03	0.16
Woodburning	26.71	146.36
Unpaved Road-Dust	25.41	139.23
Paved Road-Dust	145.40	796.71
Highway Vehicles	1.83	10.03
Agriculture	0.03	0.15
TOTAL:	282.11	1,545.79

6. References

APCD, 2008. Air Quality Control Commission Regulation Number 3. Stationary Source Permitting and Air Pollutant Emission Notice Requirements. 5 CCR 1001-5.

< <http://www.cdphe.state.co.us/regulations/airregs/100103stationarysourcepermitting.pdf> >

U.S. EPA, 2008. "2002 National Emissions Inventory Data & Documentation."

< <http://www.epa.gov/ttn/chief/net/2002inventory.html#documentation> >

28.78	54.18	Construction
0.00	0.00	Fuel Combustion
41.80	2.13	Non-Road
0.12	0.00	Structure Fires
1.19	21.87	Woodburning
47.70	21.48	Unpaved Road Dust
67.00	122.98	Paved Road Dust
10.88	1.93	Highway Vehicles
0.18	0.00	Agriculture
1,390.86	238.13	TOTAL

0.10	1.77	Commercial Cooking
428.10	78.31	Construction
0.00	0.00	Fuel Combustion
14.20	2.80	Non-Road
0.10	0.00	Structure Fires
142.30	25.71	Woodburning
136.23	28.41	Unpaved Road Dust
780.71	146.40	Paved Road Dust
10.00	1.83	Highway Vehicles
0.18	0.00	Agriculture
1,548.78	282.11	TOTAL